

Intellectual Capital and Business Performance: Evidence from Nigeria

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ABSTRACT

The impact of intellectual capital (IC) on the general performance of the organisation has become a very important issue now than ever, this is due to the level of globalisation of whose outcomes are privatization and deregulation of markets, aggressive competition and the ever-rising expectations of customers. As a result of this, there is need for organisations to be at their best in order to be relevant in the environment. This paper focuses on developing economies and on Nigeria specifically. Using a sample of thirty-two audited financial statements of quoted companies in Nigeria, the paper examines the impact of IC components on business performance measured with Return on Equity (ROE) and Return on Assets (ROA). The results show that intellectual capital has a positive and significant relationship with the performance of business organizations in Nigeria. These results reinforce the accumulating body of empirical support for the positive impact of Intellectual capital on business performance. Based on the findings, the study recommends that corporate entities in Nigeria should invest in Human, Structural and Customer Capital in order to increase their performance.

Keywords: *Intellectual capital, Human capital, Structural capital, Customer capital, Business performance.*

INTRODUCTION

It is recognised that intellectual capital (IC) is embraced in every facets of economic, sociological, political and managerial development ‘in a manner previously unknown and largely unforeseen’ (Petty and Guthrie, 2000). This has turn intellectual capital into a prominent business research topic (Bontis, 1999; Serenko and Bontis, 2004) which organizations must pay attention towards the attainment of their objectives. Intellectual Capital has been defined in various ways in the literature (Bontis, 1996; Brooking, 1996; Roos and Ross, 1997). One of the most concise definitions of intellectual capital is given by Stewart (1997) as “packaged useful knowledge.” He explains that this includes an organization’s processes, technologies, patents, employees’ skills, and information about customers, suppliers, and stakeholders. Various other definitions use concepts such as ability, skill, expertise, and other forms of knowledge that are useful in organizations. Brooking (1996), states that “Intellectual capital is the term given to the combined intangible assets which enable the company to function.”

The task of measuring the performance of intellectual capital in organization becomes a major step to investigating the reasons for low or high performance of workers. Hence the measurement of corporate performance needs to include the firm’s total resources (physical and intellectual).

Business performance is an important concept that relates to the way and manner in which financial resources available to an organization are judiciously used to achieve the overall corporate objective of an organization. It is therefore important that organization’s performance be measured on a regular basis in order to ensure sustainability.

Intellectual capital research has been conducted in a variety of international settings including the United Kingdom (Roos et al., 1997), Australia (Sveiby, 1997), Canada (Bontis, 1996; 1998; 1999), Austria (Bornemann, 1999), the U.S. (Stewart, 1997; Bassi and Van Buren, 1999), Malaysia (Bontis et al., 2000), Hong Kong (Chu et al., 2011), South Africa (Firer and Stainbank, 2003), and Sub Sahara Africa (Kwasi and Kwesi, 2011). However, there appears to be dearth of literature on IC research in Nigeria. Therefore, this study attempts to fill this gap by providing evidence on IC and business performance in Nigerian listed firms.

The rest of the paper is structured as follows: the next section reviews the existing work on intellectual capital and business performance. Section three provides a brief description of the data employed for the empirical analysis and specifies the estimation models. Section four presents the analysis of data and interpretation of results. The final section summarizes the findings and draws out some policy implications.

LITERATURE REVIEW

The wealth of the modern economy no longer depends on only physical assets but on the contrary it depends on intangible assets. Intellectual capital is associated with the main source of individual, organizational as well as national competitiveness in today's economy (Wiig, 1997; Bonfour and Edvinsson, 2005). Roos et al. (1997) and Bontis et al. (2000) believe that intellectual capital is recognized as a set of intangible assets such as resources, competences and capabilities which increase not only firm performance but also lead for organizational value creation.

Galbraith (1996) sees intellectual capital as a form of knowledge, intellect, brain activity which uses knowledge as a source of value creation. Intellectual capital is recognized "as an aggregation of all knowledge and competences of employees that can bring competitive advantages for the organizations (Stewart, 1997). It has been argued that employee knowledge capabilities, creativity and innovation, organizational structure or relational issues can be recognized as intellectual capital due to its convention of employee implicit knowledge into explicit knowledge of the organization (Shaikh, 2004; Phusavat and Kanchana, 2007).

Generally, three components of IC have been identified comprising human, structural and customer capital (Edvinsson, 2000; Bontis, 1998; Bontis et al., 2000).

Human Capital: Is defined as the combined knowledge, skill, innovativeness and ability of the company's individual employees to meet the task at hand (Choo and Bontis, 2002; Guerrero, 2003). Human capital is the foundation of intellectual capital as everything in the current market environment relies on the individual's ideas, knowledge and skills. It is asserted that the human capital in an organisation is the most important intangible asset, especially in terms of innovation (Edvinsson, 2000; Stewart, 1997; Brooking, 1996). Human capital also encompasses how effectively an organization uses its people/human resources as measured by creativity and innovation (Bontis et al., 2002; Bollen et al., 2005). Human capital cannot be owned by the company.

Structural Capital: Is the hardware, software, databases, organizational structure, patents, trademarks and everything that supports employees' productivity. Structural capital is the supportive infrastructure that enables human capital to function (Bontis et al., 2000). It describes the internal structure of an organisation, such as its strategies, core competencies and culture, which is always context specific. Structural capital is owned by an organization and remains with an organization even when the people leave. Edvinsson and Malone (1997) further divide structural capital into organizational capital, process and innovation capital.

- i. Organizational capital includes the organization philosophy and system for leveraging the organization's capability.
- ii. Process capital includes the techniques, procedures and programs that implement and enhance the delivery of goods and services.
- iii. Innovation capital includes intellectual properties and intangible assets. Intellectual properties are protected by commercial rights such as copyright, patent and trademarks. Intangible assets are all or the other talents and theory by which an organization is run.

Customer/Relational Capital: Represents the potential an organisation has due to ex-firm intangibles (Bontis, 1999). It is the knowledge embedded in relationships with customers, suppliers, industry associations or any other stakeholder that influence the organization's life. Customer capital encompasses the external intangible assets of an organisation. External forces play a part in determining the market position and strength of an organisation. Customers are the principal determinants of this position (Smith and Saint-Onge, 1996; Prahalad and Ramaswamy, 2000).

The increasing attention of intellectual capital is based on its capability to influence firms' performance. With respect to IC and business performance, the literature consists of three principal strands: (i) the existence of a positive relationship between IC and business performance (ii) the lack of relationship between IC and business performance; and (iii) the existence of a negative relationship between IC and business performance.

Previous studies (Barney, 1991; Bontis, 1998; Bassi and Van Buren, 1999; Bontis et al., 2000; Pulic, 2000b; Appuhami, 2007) confirm a very strong and positive relationship between intellectual capital and business performance.

Low (2000) identifies the importance of non financial intangibles (Intellectual capital) and examined their role in a company's performance. The findings suggest that improvement in critical intangible resources result in increased market value. Reed (2000) test the association between intellectual and companies' performance in the banking industry the result suggests that intellectual capital is a strong predictor of a company's performance. Goh and Ryan (2005) conclude that physical capital is crucial for financial institutions operations but it is eventually the intellectual capital that determines the quality of services provided to the customers.

Nielson et al. (2006) propose that human resources capital is the core of intellectual capital components, they include skilled staff, knowledge and management philosophy the company's performance has been affected. Riahi-Belkaoui (2003) examines the relationship between intellectual capital and the performance of multi-national companies in the United States of America. The results of the study support the notion that intellectual capital is positively associated with financial performance. Chen et al. (2005) find that intellectual capital and physical capital have a positive impact on market return as well as on current and future financial performance in the database of Taiwanese firms. Bontis et al. (2007) examine intellectual capital in the pharmaceutical sector of Jordan came up with the conclusion that intellectual capital influences business positively.

In their study, Cabrita and Vaz (2006) prove that intellectual capital is substantively and significantly related to the organizational performance in the Portuguese banking industry.

Despite all the positive derivations by scholars, Firer and Stainbank (2003) discover a negative relationship between intellectual capital and business performance in the South African Economy and came to the conclusion that intellectual capital has no positive relationship on business performance, nor a positive influence on analysts and investors.

Finally, Chu et al. (2011) examine the impact of intellectual capital on business performance in Hong Kong. They find that there was no relationship between intellectual capital (Value added intellectual capital) and the components of business performance (Market to book value, Return on asset and Asset turnover).

The review of relevant literature on empirical studies clearly reveals mixed result hence the need to undertake an investigation on the relationship between intellectual capital and business performance in Nigeria.

METHODOLOGY

This study is explanatory. Saunders et al. (2007) state that studies that establishes causal relationship between variables may be termed explanatory. This research strategy was considered necessary because of its ability to view comprehensively the issues raised in the research work. The study is based on content analysis of the annual reports of the sample companies in order to obtain data to measure the dependent and independent variables. According to Guthrie et al. (2004), content analysis is one of the more widely used research method applied in investigating the frequency and type of intellectual capital reporting.

The population of study is made up of all companies listed on the floor of the Nigeria Stock Exchange (NSE). A sample of thirty-two (32) quoted companies for the period 2009 year end was used (Appendix 1).

The dependent variable of the study is business performance which is represented by Return on Total Asset (ROA) measured by the ratio of net income to total assets and Return on Equity (ROE) measured by the ratio of profit after tax to the organizations' share capital. The independent variable is intellectual (IC) which is the addition of its three components (Human, Structural and Customer Capital). Appendix 2 summarized the description of the variables.

In order to measure the value added efficiency of the companies' physical and intellectual capital, the study employs the Value Added Intellectual Coefficient (VAIC) methodology. This methodology is considered a universal indicator and it shows the abilities of a company in value creation and representing a measure for business efficiency in a knowledge-based economy (Pulic, 1998).

The regression model is represented as follows:

$$INTCAP = \alpha_0 + \alpha_1 HC + \alpha_2 SC + \alpha_3 CC$$

$$\gamma_{ROE} = \beta_0 + \beta_1 INTCAP$$

$$\gamma_{ROA} = \chi_0 + \chi_1 INTCAP$$

Where:

INTCAP = Intellectual Capital

HC = Human Capital

SC = Structural Capital

CC = Customer Capital

ROA = Return on Assets

ROE = Return on Equity

$\alpha_0, \beta_0, \chi_0$ = Intercept coefficient

$\alpha_1, \beta_1, \chi_1$ = Coefficient for each of the independent variables

STATISTICAL RESULTS AND FINDINGS

This section of the paper is devoted to presenting the results of the analysis performed on the data collected. Analyses were carried out with the aid of the Statistical Package for Social Sciences, (SPSS Version 17.0).

A Pearson correlation analysis was performed on the dependent and independent variables in order to determine the degree of relationship between them. The results are shown in Table 1, which reveals that ROA is positively and significantly correlated to intellectual capital at $p < 0.01$.

Table 2 presents summary of regression model result. The value of R and R^2 are 0.797 and 0.635 respectively. The R value of 0.797 represents the correlation between ROA and the INTCAP. The R^2 which indicates the explanatory power of the independent variables is 0.635. This means that about sixty-four percent of the variation in ROA is explained by the independent variable. The R^2 value as revealed by the result is high which means that about thirty-six percent (36%) of the variation in the dependent variable is unexplained by the model, denoting a strong relationship between the explanatory variable and ROA. The standard error of the estimate is 7.087, which explains how representative the sample is likely to be of the population.

The strength of the model was also considered by examining the goodness-of-fit of the model. Results show that that model designed for the study is good as evidenced by the result in Table 3 which has F value of 5.158 and p value < 0.05 .

Table 4 shows the results of the coefficients of regression model with ROA as dependent variable. The t-values for intellectual capital is 7.222. The value is also significant at p-value < 0.05 . It can be deduced from the results that intellectual capital impact positively and significantly on business performance in Nigeria.

The results of Pearson correlation analysis on ROE and INTCAP are shown in Table 5. ROE is positively and significantly correlated to intellectual capital at $p < 0.01$.

Table 6 presents summary of regression model result. The value of R and R^2 are 0.815 and 0.664 respectively. The R value of 0.815 represents the correlation between ROE and the INTCAP. The R^2 which indicates the explanatory power of the independent variables is 0.664. This means that about sixty-six percent (66%) of the variation in ROE is explained by the independent variable. The R^2 value as revealed by the result is high which means that about thirty-four percent (34%) of the variation in the dependent variable is unexplained by the model, denoting a strong relationship between the explanatory variable and ROE. The standard error of the estimate is 1.078, which explains how representative the sample is likely to be of the population.

The strength of the model was also considered by examining the goodness-of-fit of the model. Results show that that model designed for the study is good as evidenced by the result of Table 7 which has F value of 9.197 and p value < 0.05 .

Table 8 shows the results of the coefficients of regression model with ROE as dependent variable. The t-values for intellectual capital is 7.694. The value is also significant at p-value < 0.05 . It can be deduced from the results that intellectual capital impact positively and significantly on business performance in Nigeria.

CONCLUSION

The paper empirically examines the extent to which intellectual capital contributes to the performance of Nigerian listed firms. Data on components of intellectual capital and business performance variables were obtained from the financial statements of selected quoted companies in Nigeria. The components and variables include Human Capital, Structural Capital Customer Capital, Return on Assets and Return on Equity. Using a sample of thirty-two audited financial statements of quoted companies in Nigeria, this paper examines the impact of intellectual capital on business performance measured with Return on Assets (ROA) and Return on Equity (ROE). The results show that intellectual capital has a positive and significant relationship with the performance of business organizations in Nigeria. These results reinforce the accumulating body of empirical support for the positive impact of Intellectual capital on business performance. Based on the findings, the study recommends that corporate entities in Nigeria should invest in Human, Structural and Customer Capital in order to increase their performance.

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TABLES

TABLE 1: CORRELATION MATRIX OF RETURN ON ASSET AND INTELLECTUAL CAPITAL

		ROA	INTCAP
ROA	Pearson Correlation	1	.797(**)
	Sig. (2-tailed)		.000
	N	32	32
INTCAP	Pearson Correlation	.797(**)	1
	Sig. (2-tailed)	.000	
	N	32	32

** Correlation is significant at the 0.01 level (2-tailed).

TABLE 2: SUMMARY OF REGRESSION MODEL RESULT

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.797(a)	.635	.623	7.08689

a Predictors: (Constant), INTCAP

TABLE 3: SUMMARY OF ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
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1	Regression	2619.582	1	2619.582	5.158	.000(a)
	Residual	1506.719	30	50.224		
	Total	4126.301	31			

a Predictors: (Constant), INTCAP

b Dependent Variable: ROA

TABLE 4: SUMMARY OF COEFFICIENTS OF REGRESSION MODEL

Model		Unstandardized Coefficients		Standardized Coefficients	t		Sig.
		B	Std. Error	Beta	B	Std. Error	
1	(Constant)	.043	1.288		.033	.974	
	INTCAP	3.73E-005	.000	.797	7.222	.000	

a Dependent Variable: ROA

TABLE 5: CORRELATION MATRIX OF RETURN ON EQUITY AND INTELLECTUAL CAPITAL

		ROE	INTCAP
ROE	Pearson Correlation	1	.815(**)
	Sig. (2-tailed)		.000
	N	32	32
INTCAP	Pearson Correlation	.815(**)	1
	Sig. (2-tailed)	.000	
	N	32	32

** Correlation is significant at the 0.01 level (2-tailed).

TABLE 6: SUMMARY OF REGRESSION MODEL RESULT

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.815(a)	.664	.652	1.078233

a Predictors: (Constant), INTCAP

TABLE 7: SUMMARY OF ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	708668.372	1	708668.372	9.197	.000(a)
	Residual	359141.370	30	11971.379		
	Total	1067809.742	31			

a Predictors: (Constant), INTCAP

b Dependent Variable: ROE

TABLE 8: SUMMARY OF COEFFICIENTS OF REGRESSION MODEL

Model		Unstandardized Coefficients		Standardized Coefficients	t		Sig.
		B	Std. Error	Beta	B	Std. Error	
1	(Constant)	-2.290	19.881		-.115	.909	
	INTCAP	.001	.000	.815	7.694	.000	

a Dependent Variable: ROE

APPENDICES

Industrial distribution of companies in the sample

S/N	COMPANY	INDUSTRIES
1	First Bank Nigeria PLC	Banking
2	Crusader Nigeria PLC	Other Financial Institution
3	Cement Company of Northern Nigeria PLC	Building Material
4	Dangote Sugar Refinery PLC	Industrial/Domestic
5	Wema Bank	Banking
6	Pharma Deko PLC	Healthcare
7	Conerstone Insurance	Insurance
8	Ikeja Hotel	Industrial and Domestic
9	Prestige Assurance PLC	Insurance
10	MC Nichols consolidated PLC	Food/Beverages &Tobacco
11	Aso Savings and Loan PLC	Banking
12	National Salt Company of Nigeria	Food/Beverages &Tobacco
13	Briscoe Nigeria PLC	Automobiles/Tyres
14	African Petroleum Industry	Petroleum
15	United Bank of Africa	Banking
16	Union Bank	Banking
17	Flour Mills.NIG.PLC	Food/Beverages & Tobacco
18	Oando PLC	Petroleum(Marketing)
19	Chellarams PLC	Conglomerate
20	DN Tyre and Rubber PLC	Automobiles and Tyres
21	Oasis Insurance	Insurance
22	Goldlink Insurance	Insurance
23	Chemical and Allied PLC	Chemical and Paint
24	Zenith Bank	Banking
25	May and Bakers Nigeria PLC	Industrial/Domestic
26	UTC PLC	Industrial/Domestic
27	NCR Nigeria PLC	Computer & Office Equipment
28	Charms PLC	Information& Communication Technology
29	Julius Berger Nigeria Plc	Construction
30	Consolidated Hallmark Insurance PLC	Insurance
31	Dangote Flour Mill PLC	Industrial/Domestic
32	Fidson Health Care PLC	Healthcare

Variables Description

$$VAIC = HCE + SCE + CEE \quad (1)$$

Where:

HCE = Human capital efficiency

SCE = Structural capital efficiency

CEE = Capital employed efficiency

$$HCE = VA/HC \quad (2)$$

Where:

VA= value added, which represents the gross global value added created by the firm

The value of a company for the purpose of our study is given below:

$$VA = I + D + T + R$$

Where:

I = Interest expense

D = Dividends

T = Corporate taxes

R = Retained profits

HC = human capital, total company investment in employee salaries and wages

$$SCE = SC/VA \quad (3)$$

Where

SC = structural capital of the company represented as (VA-HC)

$$CEE = VA/CE \quad (4)$$

Where:

CE = book value of the net assets for company